



Atty. Dkt. No. 036390-0102

IFW
DOAE
JW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: John L. Jorstad et al.
Title: PROCESS FOR GENERATING A SEMI-SOLID SLURRY
Appl. No.: 10/715,362
Filing Date: 11/19/2003
Examiner: Len TRAN
Art Unit: 1725

PROPRIETARY IDS TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an amendment in the above-identified application.

☒ Petition Under 37 CFR 1.59(b) to Expunge Proprietary Information Submitted Under MPEP
§.724.02

☒ Proprietary Information Disclosure Statement Under 37 CFR § 1.56 and MPEP § 724 and
6 Attachments.

☒ The fee required for additional claims is calculated below:

	Claims As Amended		Previously Paid For		Extra Claims Present		Rate		Additional Claims Fee
Total Claims:	57	-	57	=	0	x	\$50.00	=	\$0.00
Independent Claims:	3	-	3	=	0	x	\$200.00	=	\$0.00
First presentation of any Multiple Dependent Claims:						+	\$360.00	=	\$0.00
CLAIMS FEE TOTAL									= \$0.00

☐ Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total
number of months checked below:

<input type="checkbox"/>	Extension for response filed within the first month:	\$120.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the second month:	\$450.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the third month:	\$1,020.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fourth month:	\$1,590.00	\$0.00
<input type="checkbox"/>	Extension for response filed within the fifth month:	\$2,160.00	\$0.00
EXTENSION FEE TOTAL:			\$0.00
<input type="checkbox"/>	Statutory Disclaimer Fee under 37 C.F.R. 1.20(d):	\$130.00	\$0.00
CLAIMS, EXTENSION AND DISCLAIMER FEE TOTAL:			\$0.00
<input checked="" type="checkbox"/>	Small Entity Fees Apply (subtract ½ of above):		\$0.00
TOTAL FEE:			\$0.00

☒ A check in the amount of \$130.00 is enclosed.


☒ The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date February 15, 2005

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5490
Facsimile: (202) 672-5399

By 
 For Michael D. Kaminski
 Attorney for Applicant
 Registration No. 32,904
 NY # 43,445



Atty. Dkt. No. 036390-0102

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: John L. Jorstad et al.
Title: PROCESS FOR GENERATING A
SEMI-SOLID SLURRY
Appl. No.: 10/715,362
Filing Date: 11/19/2003
Examiner: L. Tran
Art Unit: 1725

**PETITION UNDER 37 CFR 1.59(b) TO EXPUNGE
PROPRIETARY INFORMATION SUBMITTED UNDER MPEP § 724.02**

Mail Stop Petition
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant respectfully requests that the Proprietary Information Disclosure Statement (PIDS) filed February 16, 2005 be expunged and that the documents be appropriately disposed of in accordance with 37 CFR 1.59.

Applicant submits the following information in support of this petition to expunge:

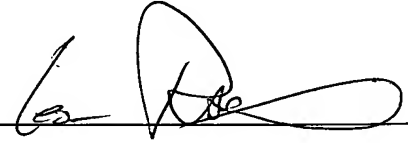
1. The February 16, 2005 PIDS was submitted per MPEP § 724 and § 724.02.
2. The petitioner will retain the proprietary information for the period of any patent with regard to which such information is submitted.
3. The items listed in the PIDS are requested to be expunged as they are deemed to be trade secret material, proprietary material, and/or subject to a protective order.
4. The information being expunged has not been otherwise made public.
5. This petition to expunge is being submitted by the same party who originally submitted the PIDS.

02/17/2005 TTRAN1 00000022 190741 10715362
01 FC:1463 70.00 DA 130.00 OP

Accompanying this petition is a fee of \$130.00. Applicant therefore requests the PTO to appropriately dispose of the February 16, 2005 PIDS.

Respectfully submitted,

Date 2/16/05

By 

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Leon Radomsky
Attorney for Applicant
Registration No. 43,445



**PROPRIETARY MATERIAL NOT OPEN TO PUBLIC.
TO BE OPENED ONLY BY EXAMINER OR OTHER AUTHORIZED
PATENT AND TRADEMARK OFFICE EMPLOYEE**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: John L. Jorstad et al.
Title: PROCESS FOR GENERATING A
SEMI-SOLID SLURRY
Appl. No.: 10/715,362
Filing Date: 11/19/2003
Examiner: L. Tran
Art Unit: 1725

**PROPRIETARY INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR 1.56 AND MPEP §§ 724**

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed are a series of emails between some of the inventors and Deepak Saha, Diran Apelian, Rathindra ("Babu") dasGupta and Lars Arnberg. Applicants submit that these emails are not prior art with respect to the present application because they were made in confidence and are therefore not publicly available (i.e., not publicly known or used) as prior art under §102(a) or (b). See MPEP § 2132. Furthermore, the emails relate to a proposed experimental use and proposed developmental testing of the invention and therefore do not constitute a public use of the invention. See MPEP § 2133(e) and § 2133(e)(6).

Deepak Saha is a current doctoral student at Worcester Polytechnic Institute ("WPI") and also an intern at SPX Contech Corporation. His doctoral research at WPI is apparently sponsored by the SPX Contech Corporation. Dr. Diran Apelian is a professor at WPI and Mr. Saha's thesis advisor. One of the present inventors, John Jorstad, has worked with Professor

Apelian on many research projects over the years and will be a member of Mr. Saha's thesis defense committee. Thus, Mr. Jorstad has an interest in Mr. Saha's doctoral research projects. Babu dasGupta is chief scientist at SPX Contech. Dr. Lars Arnberg is professor at Norwegian University of Science and Technology ("NUST") in Norway. John Jorstad previously worked with him on student research projects at NUST. Professor Arnberg collaborates with John Jorstad and Professor Apelian on a variety of projects.

Dr. Apelian and Dr. dasGupta previously asked Mr. Jorstad if Mr. Jorstad had any suggestions on how Mr. Saha should approach his doctoral research project at WPI. Specifically, Mr. Saha's research project was sponsored by SPX Contech and related to researching rheocasting of 390 aluminum alloy.

The substance of the attached emails relates to Mr. Jorstad's reply to the question posed by Dr. Apelian and Dr. dasGupta. Specifically, Mr. Jorstad suggested to Deepak Saha and Lars Arnberg that further research and development of some of the aspects of the invention disclosed in the present application would make a good doctoral research project for Mr. Saha or Mr. Arnberg, under the supervision of Professor Apelian. In the next to the last paragraph of his email of June 2, 2002, Mr. Jorstad notes that any experiments to be performed by Mr. Saha or Mr. Arnberg would have to be with permission and control of the assignee of the present application (THT Presses, Inc.) and subject to the appropriate contractual provisions (these provisions ordinarily include patent ownership, confidentiality, etc.). It is believed by the applicants that these emails were sent with the understanding that their subject matter would remain confidential between the parties.

Applicants consider the aforementioned documents and the disclosure of their existence to constitute proprietary information. Accompanying this Proprietary Information Disclosure Statement is a transmittal letter indicating that the materials contained herein are proprietary, as required by MPEP § 724.02.

Applicants respectfully request that the Examiner consider the foregoing information and provide in the next official communication the information set forth in MPEP § 724.04(a), particularly the information under item (D), so that the applicant can, if appropriate, subsequently file a petition to expunge those materials, as provided according to MPEP § 724.05.

Respectfully submitted,

Date 2/16/05

By 

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Leon Radomsky
Attorney for Applicant
Registration No. 43,445



Subj:	Deepak's slurry 390 alloy project
Date:	2/19/02 11:14:26 AM Pacific Standard Time
From:	JJorstad
To:	babu.dasgupta@contech.spx.com , dapelian@wpi.edu
CC:	mthieman@thtpresses.com

Hello Babu and Diran,

As you have surely determined by now, billet SSM of 390 alloy works quite well but slurry SSM of 390 is a challenge.

We have now conducted experiments at THT making 390 alloy by SLC casting that looks quite promising -- we achieved small primary Si particles (20-25 microns) albeit with somewhat less than desirable overall Si particle distribution.

I think we need to meet and discuss sometime soon. Unless he has already embarked on another solution, I envision that Deepak could pick up from what we have done and further develop and fine tune the concept. I believe it has the makings of a good doctoral study and could position Deepak, WPI, SPX and THT quite well.

JOHN



Subj: Re: Deepak's slurry 390 alloy project
Date: 2/19/02 11:35:46 AM Pacific Standard Time
From: Babu.DasGupta@Contech.SPX.com
Sender: Babu.DasGupta@Contech.SPX.com
To: JJorstad@aol.com
CC: dapelian@wpi.edu, mthieman@thtpresses.com

Looking forward to discussing the data. Sounds good.

I will be gone from Feb 23 till Feb 28 on vacation.

Can we meet sometime in March—let us say March 6??? in
DAYTON??? or where???

Let me know.

Thanks

Babu DasGupta
Chief Scientist
SPX CONTECH
TECHNOLOGY DEVELOPMENT CENTER
616-782-8671 (#258)
OR
616-327-9997 (#8041)
email: babu.dasgupta@contech.spx.com

JJorstad@aol.
com To: babu.dasgupta@contech.spx.com, dapelian@wpi.edu
cc: mthieman@thtpresses.com
02/19/02 Subject: Deepak's slurry 390 alloy project
02:14 PM

Hello Babu and Diran,

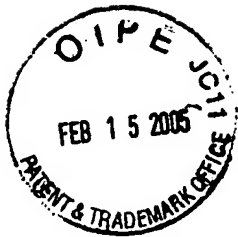
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I think we need to meet and discuss sometime soon. Unless he has already embarked on another solution, I envision that Deepak could pick up from what we have done and further develop and fine tune the concept. I believe it has the makings of a good doctoral study and could position Deepak, WPI, SPX and THT quite well.

JOHN

Tuesday, February 19, 2002 America Online: JJorstad



Subj: **My id**
Date: 5/28/02 8:53:37 AM Pacific Daylight Time
From: saha@WPI.EDU (Deepak Saha)
To: JJorstad@aol.com

Dear Sir,

I am forwarding my id to you (saha@wpi.edu). How was your trip back? and the long weekend? I managed to do small scale experiments in small cruciblecasting Hyper-eutectic 390 at various crucible temperatures and pouring temperatures....this weekend. Will let u informed about any interesting results.

Take and regards, Deepak

----- Headers -----
Return-Path: <saha@WPI.EDU>
Received: from rly-zd03.mx.aol.com (rly-zd03.mail.aol.com [172.31.33.227]) by air-zd02.mail.aol.com (v86.11) with ESMTP id MAILINZD24-0528115337; Tue, 28 May 2002 11:53:37 -0400
Received: from smtp.WPI.EDU (smtp.wpi.edu [130.215.24.62]) by rly-zd03.mx.aol.com (v86.11) with ESMTP id MAILRELAYINZD33-0528115317; Tue, 28 May 2002 11:53:17 -0400
Received: from deepak (washburn-79-184.dyn.WPI.EDU [130.215.79.184])
by smtp.WPI.EDU (8.12.3/8.12.3) with ESMTP id g4SFHrHuG016547
for <JJorstad@aol.com>; Tue, 28 May 2002 11:53:17 -0400 (EDT)
From: "Deepak Saha" <saha@WPI.EDU>
To: <JJorstad@aol.com>
Subject: My id
Date: Tue, 28 May 2002 11:53:08 -0400
Message-ID: <000001c2065f5c62af900\$b84fd782@deepak>
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="====_NextPart_000_0001_01C2063E.3F195900"
X-Priority: 3 (Normal)
X-MSMail-Priority: Normal
X-Mailer: Microsoft Outlook, Build 10.0.3416
Importance: Normal
X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2600.0000



Subj:	SSM Slurry 390 Alloy
Date:	6/2/02 8:18:22 AM Eastern Daylight Time
From:	JJorstad
To:	dapelian@wpi.edu, mmm@wpi.edu, saha@WPI.EDU
CC:	Lars.Amberg@NTNTNU.no, babu.dasgupta@contech.spx.com, mthieman@thtpresses.com

As promised last week, here is a brief description of the experiments we did at THT making 390 alloy parts by the SLC (SSM slurry) method:

Making 390 alloy SSM parts using billet works exceptionally well because DC casting provides ideal opportunity for a) high-efficiency additions of phosphorus, b) rapid cooling/solidification in the critical primary Si formation temperature range and c) water cooling to overcome the high heat of fusion associated with formation of primary Si crystals (and, unlike hypoeutectic alloys, no MHD stirring is required). When billet is reheated, the primary Si is not remelted so 1) whatever size/distribution of primaries was created while making billet is pretty well retained in the final part, and 2) the caster does not contend with the high heat of fusion that limits productivity when casting from liquid.

As you might well imagine, making 390 alloy slurry is a quite different matter. It is easy to provide phosphorus (AlP) nuclei, but delaying solidification in the slurry range allows primary Si to grow to large size and slight differences in specific gravity between Si and the melt tends to promote primary segregation.

We experimented at THT making slurry by first adding eutectic phos-copper (the eutectic ~8% P melts almost instantaneously at 1400 F+ and/or dissolves very rapidly at temperatures down to 1200 F). I was able to create many nuclei, but the first crystals to form still seemed to grow quite large during the delay mid-solidification. The result was a microstructure having both tiny and large primary crystals, and there was segregation akin to that experienced when die casting 390 alloy much too cold (say, at 1120- 1150 F).

I acquired some of the AlCuP from Wolfgang Schneider at VAW, and did experiments with that. (AlCuP provides instantaneous AlP of tiny size, and also provides more of a chill than the tiny amount of phos-copper I had been using). I could add that at a little above liquidus (~1200 F) and achieve good nucleation, but still the cooling rate was too slow to get a really good microstructure.

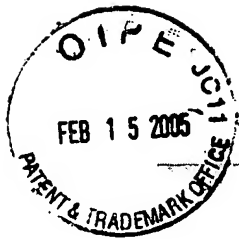
Next, I calculated the amount of chill I would need to rapidly bring the temperature to just above eutectic. I added to the melt in the shot sleeve the AlCuP + sufficient additional solid 390 alloy, and the result was a beautiful 390 alloy structure. We repeated several times and the result was the same.

I think this could be a basis for Deepak's work (or if he is already too far along, maybe someone else). The concept works but there is a lot to be done to fine tune, to employ the appropriate mathematics, and to devise more practical approaches to the problem (such as an automatic creation each shot of the appropriate chill/nucleation for the next shot). This could/should involve some form of real-time monitoring and control for maximum efficiency and best microstructure.

What we've done was on THT's time and machinery. Whatever is done in follow-up, should be done with THT's blessings and with appropriate agreements regarding ownership and use of whatever commercialization might result.

I'll be pleased to work with you to devise and carry out experiments.

JOHN



Subj: Deepak's project
Date: 8/9/02 11:43:56 AM Pacific Daylight Time
From: JJorstad
To: dapelian@wpi.edu

Hi Diran,

Per our telecon, I believe you can simulate 390 alloy slurry *casting*, albeit perhaps not as on a THT machine because you cannot readily simulate the pressures.

I believe you can, however, simulate what I was doing using the AlCuP material from Wolfgang Schneider at VAW.

Please recall my earlier email regarding what I had done at THT. In a nutshell, 2 - 4 grams of AlCuP per 1000 grams of melt is combined with a solid 390 alloy heat-sink weighing ~20 % of the total melt to be placed in the shot sleeve. (The heat of fusion attributable to the primary Si fraction in 390 alloy is ~15 % of the total heat of fusion of the system, thus, to quickly chill a quantity of 390 alloy melt from just above the liquidus to just above the eutectic temperatures requires re-melting a solid 390 alloy heat-sink weighing ~20 % of the total melt). That is the quick and dirty of the idea. Deepak will need to experiment and fine tune around that basic concept.

I can envision him building a rig wherein he has a "shot tube"-like chamber of steel, perhaps 3-4 inches diameter X 1-1.5 inches deep. Place over it an inverted simple steel "die"-like cavity, with opening facing the shot-tube chamber. All of that would be pre-heated to perhaps 500-600 F. To run an experiment, a pre-determined quantity of AlCuP + 390 alloy heat sink would be placed in the shot-tube chamber and the appropriate molten shot weight at a temperature just above liquidus (say, 1205-1210 F) poured over it. Immediately then rotate the shot-tube/die 180 degrees, thus dumping the shot into the die to solidify for evaluation.

That would be my thought. I'll call you sometime Monday to discuss.

JOHN



Re: Deepak's project

Page 1 of 2

Subj: **Re: Deepak's project**
Date: 8/9/02 11:50:48 AM Pacific Daylight Time
From: dapelian@WPI.EDU (Diran Apelian)
To: JJorstad@aol.com

You are great John... this is helpful.. Ill be talking to him soon, and look forward to talk to you soon.

da

Hi Diran,

Per our telecon, I believe you can simulate 390 alloy slurry *casting*, albeit perhaps not as on a THT machine because you cannot readily simulate the pressures.

I believe you can, however, simulate what I was doing using the AlCuP material from Wolfgang Schneider at VAW.

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JOHN

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Diran Apelian, Sc.D.
Howmet Professor of Mechanical Engineering
Director, Metal Processing Institute
WPI, 100 Institute Road, Worcester, MA 01609 USA
voice: 508-831-5992 / Fax: 508-831-5993
email: dapelian@wpi.edu
website: www.wpi.edu/~mpi

Monday, August 12, 2002 America Online: JJorstad